

This listing of the claims will replace all prior versions, and listings, of claims in the application:

Claims 1-27 and 31-32 were previously cancelled.

28. **(Previously Amended)** An apparatus for electrolyzing water for the production of hydrogen, oxygen and heat, which comprises:

(i) an electrochemical cell having an isotopic hydrogen storage cathode, an electrically conductive anode and a compartment for holding an ionically conducting electrolyte comprising water, and

(ii) a pulsed power supply for said electrochemical cell comprising means for generating a repeating sequence of voltages across said anode and said cathode, each said sequence including a first cell voltage regime consisting of a voltage sufficient to enhance cathodic absorption of hydrogen and a second voltage regime consisting of at least one voltage pulse which is at least two times the voltage of the first cell voltage regime in magnitude with a duration no greater than 0.10 seconds.

29. **(Previously Amended)** The apparatus of Claim 28 wherein said voltage of said first cell voltage regime generated by said pulsed power supply ranges from about 1 to about 10 volts, and the voltage pulse of said second cell voltage regime ranges from 2 to 1000 times the voltage of said first cell voltage regime, and the total duration of said second voltage pulse ranges from about 0.5 nanoseconds to about 0.10 seconds.

30. **(Previously Amended)** The apparatus of Claim 28 wherein said pulsed power supply is operatively arranged to dovetail said second cell voltage regime onto said first cell voltage regime.

33. **(Previously Added)** The apparatus of Claim 28, wherein said pulsed power supply is operatively arranged to superimpose said second cell voltage regime onto said first cell voltage regime.

34. **(Previously Added)** The apparatus of Claim 29, wherein said pulsed power supply is operatively arranged to dovetail said second cell voltage regime onto said first cell voltage regime.

35. **(Previously Added)** The apparatus of Claim 29, wherein said pulsed power supply is operatively arranged to superimpose said second cell voltage regime onto said first cell voltage regime.

36. **(Previously Added)** The apparatus of Claim 28, wherein each said sequence of said pulsed power supply further includes a positive voltage sufficient for cleaning said anode.

37. **(Previously Added)** The apparatus of Claim 28, wherein each said sequence of said pulsed power supply further includes a positive voltage sufficient for cleaning said cathode.

38. **(Previously Added)** The apparatus of Claim 28, wherein said pulsed power supply is operatively arranged to re-equilibrate the cathode in a region of zero potential.

39. **(Previously Added)** The apparatus of Claim 29, wherein said pulsed power supply is operatively arranged to re-equilibrate the cathode in a region of zero potential.

40. **(Previously Added)** The apparatus of Claim 36, wherein said pulsed power supply is operatively arranged to apply a negative potential for further cathodic absorption of hydrogen.

41. **(Previously Added)** The apparatus of Claim 37, wherein said pulsed power supply is operatively arranged to apply a negative potential for further cathodic absorption of hydrogen.

42. **(Currently amended)** An apparatus for electrolyzing water for the production of hydrogen, oxygen and heat, which comprises:

(i) an electrochemical cell having an isotopic hydrogen storage cathode, an electrically conductive anode and a compartment for holding an ionically conducting electrolyte comprising water, and

(ii) a pulsed power supply for said electrochemical cell[[,]] comprising:

a triple power supply having a first low voltage direct current supply, a second low voltage direct current supply, ~~and~~ a third low voltage direct current supply and a fourth high voltage direct current supply;

an oscillator coupled to and powered by said second low voltage direct current supply, operatively arranged to provide a train of timing pulses;

a binary counter operatively arranged to receive said timing pulses from said oscillator;

a decoder coupled to said binary counter and operatively arranged to count said timing pulses; and,

a current generator coupled to and controlled by said decoder, said current generator operatively arranged to provide oscillating pulsed potentials to said anode and said cathode.

43. **(Previously Added)** The apparatus of Claim 42 wherein said oscillating pulsed potentials comprise a repeating sequence of voltages, each said sequence including a first cell voltage regime consisting of a voltage sufficient to enhance cathodic absorption of hydrogen and a second voltage regime consisting of at least one voltage pulse which is at least two time the voltage of the first cell voltage regime in magnitude with a duration no greater than 0.10 seconds.

44. **(Previously Added)** The apparatus of Claim 43 wherein the voltage of said first cell voltage regime ranges from about 1 to about 10 volts, and the voltage pulse of said second cell voltage regime ranges from 2 to 1000 times the voltage of said first cell voltage regime, and the total duration of said second voltage pulse ranges from about 0.5 nanoseconds to about 0.10 seconds.

45. **(Currently amended)** The apparatus of Claim 42 wherein said anode and cathode are connected via electronic switching circuitry to all ~~three~~ four of said power supplies in order that oscillating potentials of varying polarity may be impressed across said anode and cathode over time.

46. **(Previously Added)** The apparatus of Claim 42 wherein said first low voltage direct current power supply is a 12 Volt power supply.

47. **(Previously Added)** The apparatus of Claim 42 wherein the second low voltage direct current power supply is a 12 Volt power supply.

48. **(Previously Added)** The apparatus of Claim 42 wherein the third high voltage direct current power supply is a 1000 Volt power supply.